The Botanical Club of the A. A. A. S.

The success which attended the first meetings of the Club at Minneapolis, gave promise of greater success when it became possible to somewhat obviate the inconvenience of being a wholly subordinate appendix of a great body whose movements could not always be foretold with certainty. This was partly accomplished at Philadelphia, and yet the Club found itself considerably hampered for want of a convenient hour for meeting, and means for giving full notice to its members. But so much progress was made in securing suitable arrangements, that we may anticipate that a year or two more will find the Club with ample facilities for carrying on its work.

The meetings were held in the Hall of the Union League, the room where the biological section of the Association met. The first meeting, at 9 o'clock Friday morning, Sept. 5, was called to order by the President, Prof. Beal, of the Agricultural College of Michigan. The Secretary being absent, Prof. Arthur was chosen to fill his place. About thirty were present. After several announcements were made, a paper was read by Dr. N. L. Britton, of Columbia College, "On the Composition and Distribution of the Flora of New Jersey." He described the topography of the state in its relation to the distribution of the vegetation, and spoke of the rarer forms in the several regions. The present number of plants known in the state is about as follows: exogens, 1168 species and 76 varieties; endogens, 483 species and 50 varieties; gymnosperms, 12 species; ballast plants, 400 species; pteridophytes, 365 species and 75 varieties; charas, 10 species; lichens, 240 species and 62 varieties; fungi, about 1500 species; marine algæ, 110 species and 4 varieties; fresh water algæ, 510 species; diatoms, 450 species; protophytes, about 125 species; making the large total of nearly 5,500 species. The catalogue of the State is being prepared for the Geological Survey; a preliminary one was issued in 1881, and the final one is expected in about a year hence.

At 5 o'clock in the afternoon of the same day, the second meeting was held, about 40 being present. Prof. Barnes, of Purdue University, read a paper on the "Course of the Fibro-vascular Bundles in the Leaf Branches of Pinus sylvestris," in which he attempted to throw some light upon the nature of the peculiar bundles in the leaves of pine and other conifers. Each leaf has what might be taken to be two bundles, separated and surrounded by peculiar tissue, the whole enclosed in a bundle

sheath, outside which lies the usual green mesophyll. By examining the early stages in the stem, it was found that they divided first at right angles to the plane of the leaves, and afterwards each half again divides, and sends a branch to each leaf. But this does not yet wholly clear up the matter. The paper excited considerable interest, and was discussed by Profs. Buckhout, Macloskie and others.

A paper by Prof C. E. Bessey, of the Iowa Agricultural College, gave observations on the "Mode of Opening of the Flowers of Desmodium sessilifolium." They expand to a certain degree, and remain in that position till a particular spot at the base of the standard is touched, when the wings and keel drop down suddenly, the stamens are protruded, and the insect is dusted on the breast with pollen. As the stigma is thrust out in front of the anthers, in the next flower visited, it touches the pollen-covered surface of the insect before the pollen of the same flower is deposited.

Prof. Geo. Macloskie, of Princeton, followed with observations on the "Fertilization of Geranium maculatum." It is protandrous. He found that heavy insects, like bumble bees, pull the flower down, and in the efforts to hold on the pollen is rubbed upon the insect, which in like manner is deposited on the exposed stigmas of the next flower visited.

Prof. W. R. Dudley, of Cornell University spoke of the "Torsion of Stems of Eleocharis rostellata," and also on "The Protogynous Character of some Myriophyllums." Some discussion followed on torsion in this and other instances.

Prof. W. H. Seaman, of Washington, advocated the use of oblique sections in studying the fibro-vascular bundle. The protest which Prof. Bessey entered against this method for the purpose of exact study will doubtless meet the approval of most workers. Prof. Seaman also spoke of the peculiar terminations of certain bundles in the leaves of Chenopodium and Drosera.

The third meeting was held at 9 A. M. Monday, with about 25 present. Prof. Beal, the President, read a paper "Concerning the Manner in which Certain Seeds bury themselves beneath the Soil," by means of their long hygroscopic awns. He found they succeeded as well on a free surface as among grass or stubble. The discussion that followed was participated in by Profs. Rothrock, Bessey and others

Prof. W. R. Lazenby, of the Ohio University, presented a paper on the "Prolificacy of Certain Weedy Plants," based upon the number of seeds found by actual count to be produced by an average plant.

Prof. J. T. Rothrock, of the University of Pennsylvania, made some interesting remarks on Photomicrography. He said that one with an ordinary microscope was within twenty dollars of photographing. By the dry plate process an hour's practice would enable one to get a picture of some kind, and such as would lead to something better. Some photographs of wood sections were passed about to illustrate how he used this in class work. He laid much stress upon the necessity of very thin sections in all microscopic work.

The same speaker then made some remarks on the significance of "Loments of Leguminous Plants."

Dr. Gray, holding a sunflower in his hand, said Mr. Meehan had made an interesting discovery in these flowers. Instead of the pistil pushing the pollen out of the anther tube by its gradual lengthening, as had always been supposed, he found that the stamens and pistil grow together till of full length, then the filaments shorten, and the anther tube is drawn down, exposing the pistil covered with pollen, which then displays its stigmatic surfaces in the well known way. This fact is connected with the observation of Kölreuter and other older observers, that in Centaurea and some thistles, if the tips of the anther tubes are touched at the right moment, they will quite suddenly retract, which only differs from this instance of the sunflower in the time occupied by the movement. Mr. Meehan, who is inclined to see things from a somewhat different point of view from most of us, thinks this a provision for self-fertilization. But bees undoubtedly carry the pollen from one head to another. A considerable discussion followed, in which Prof Beal suggested the experiment of covering up the heads to see if any seed would set. Dr. Gray thought they would probably form, for many flowers failing to secure cross-fertilization were yet able to self-fertilize. Mrs. Wolcott, of Boston, confirmed this opinion. She had covered up the heads to keep birds away, and had obtained plenty of seeds.

The club met at the usual hour Tuesday morning. Mr. P. H. Dudley, of the Torrey Club, exhibited some fine photomicrographs of wood.

Dr. Geo. Vasey, of the U. S. Department of Agriculture, gave some interesting "Notes on the Vegetation of the Arid Plains."

Prof. Bessey spoke of the "Curvature of the Stems of Conifers," having seen branches of Austrian pine bend that were one, two, and even three years old.

Mr. Meehan discussed the "Relationship of Helianthus annuus and H. lenticularis," two species which have now been thrown together in the Synoptical Flora, the latter being considered the wild and the former the cultivated state of the common sunflower. He exhibited charts to show that *H. annuus* has a campanulate corolla, while that of *H. lenticularis* is tubular, as Nuttall had recognized in naming it *H. tubæformis*. Other differences are not so constant.

The same speaker then adverted to the retraction of the stamens in the sunflower by means of the elastic filaments. He contended that as the bees distributed pollen from one floret to another of the same head, it only constituted self fertilization, according to Mr. Darwin's definition. Mr. Carruthers, of the British Museum, spoke in commendation of the careful observations which the speaker had made.

The next paper by Prof. L. M. Underwood, of Syracuse University, on "Some Statistics Concerning the North American Hepaticæ" gave the distribution by states and regions, and the number of species in the orders: Ricciaceæ 24, Marchantiaceæ 22, Anthoceroteæ 14, and Jungermanniaceæ 171, making a total of 231 species. Of these 120 are peculiar to America, only 39 of which are commonly found in public herbaria, and 60 are probably not represented in any American collection, public or private.

Miss Grace Anna Lewis, of Philadelphia, showed a chart of the vegetable kingdom to learn if it were constructed on right principles.

The final meeting of the club was held on Wednesday morning at 9 o'clock. The first paper, by Prof. J C. Arthur, was on the "Nature of Gumming or Gummosis in Fruit Trees." He considers it to be a deorganization of the tissues through the influence of a fungus, but not necessarily a specific one. A fungus in this connection was first described last year by Oudemans in Hedwigia under the name Coryneum Beyerinckii. The speaker had been able to produce gumming by Monilia fructigena the fungus of rotting fruit, and the bacteria of pear blight, and showed specimens caused by the latter.

The report of the committee on postal matters was then called for. The committee was appointed last year at Minneapolis, and consisted of Profs. Coulter, Farlow and Bessey. The last was the only member present, who read a long statement from the Postmaster General to the effect that the present law could not be construed to allow botanical specimens to be accom-

panied by the usual written labels except at letter rates of postage, but expressing a willingness to bring the matter to the attention of the law makers at the proper time. The report was discussed, and upon motion the committee was continued. Prof. Barnes moved that the officers of the club draft resolutions to be presented for the approval of the Biological Section of the Association to still further promote the object in view.

The Club then proceeded to the election by ballot of officers for the ensuing year. The first ballot gave for president, Bessey 10, Beal 6, Hyatt 1; for secretary, Arthur 11, Barnes 2, Miss Knight 1, Dudley 1. The president announced that Prof. Bessey had been elected president and Prof. Arthur secretary.

A paper by Dr. Geo. Vasey on "A Hybrid Grass," in the author's absence, was read by the secretary, and is printed in full on another page. In the remarks that followed Prof. Scribner said Muhlenberg, Sprengel and Michaux placed *Eatonia* in *Aira*, which this discovery of Dr. Vasey showed to be not far wrong. *Graphephorum melicoides* and *G. Wolfii* might also be placed in the group *Avenaceæ*. The genus *Graphephorum* is an anomalous one, and the species should doubtless be distributed.

The Club then adjourned. The following papers were on the programme of the Club, but were not heard for want of time: "Notes on a Peculiar Flora on the Kittatinny Mountains," by Dr. N. L. Britton; "A New Preservation Fluid Especially Valuable for Plant Tissues," by Prof. C. V. Riley; Note on the Germination of Grasses," and "A Point in the Structure of the Sterile Flowers of Silphium," by Prof. C. E. Bessey; "The Fertilization of Wheat," by Prof. W. R. Lazenby.

Excursions and Entertainment of the Botanists at Philadelphia.

The prediction that the meeting of the American Association this year would bring together a large and notable attendance of botanists was fully realized. Indeed, they began to arrive as early as Saturday preceding the opening of the Association. The total attendance reached a little above one hundred, of whom six were from Great Britain. Full half the number have more than a local reputation, including a majority of our most distinguished teachers and investigators.

The arrangements for the benefit of the botanists were as elaborate and complete as could have been wished. The efforts